

but accompanied by torrential rains over most of southern Alabama and extreme western Florida. September closed with heavy rains in the Carolinas, Georgia, and Florida, with light falls in the Lakes Region and to the eastward, and fair weather elsewhere, generally.

For the month as a whole, the precipitation was heavy over considerable portions of the South Atlantic and East Gulf States, and small areas in southeastern Iowa and northwestern Washington. Elsewhere rainfall was, as a rule, moderate to light, and quite extensive areas in California, Nevada, and northwestern Utah received no precipitation during the month.

RELATIVE HUMIDITY.

For the month as a whole the atmosphere was relatively drier than usual for September throughout much of the coastal portion of the New England, Middle Atlantic, and Gulf States, and likewise in California and Nevada. Elsewhere the relative humidity was generally above the normal, although in many small irregularly distributed areas it was lower than the seasonal average.

GENERAL SUMMARY.

On the whole, during September, 1917, the weather was favorable for farm work. Crops matured satisfactorily in the West and Northwest under generally favorable weather conditions, but it was too cool in the Central and Eastern States for the best development of vegetation; corn and other fall crops matured slowly. Plowing and seeding of winter grains made good progress.

The weather was too dry in some sections and too cool in nearly all portions of the Cotton Belt for the favorable development of cotton. Late potatoes and truck crops made good progress in most sections, and the ripening of fruit progressed satisfactorily. The weather was generally favorable for meadows and pastures, and live stock was in good condition.

Average accumulated departures for September, 1917.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
	° F.	° F.	° F.	In.	In.	In.	0-10	P. ct.	P. ct.	P. ct.
New England.....	57.9	-2.0	-11.8	1.84	-1.30	-1.50	4.6	-0.6	79	-2
Middle Atlantic.....	63.1	-3.4	-6.8	2.56	-0.80	-3.10	5.2	+0.5	66	-12
South Atlantic.....	70.8	-2.3	+3.3	5.99	+0.40	-6.30	6.1	+1.5	82	+1
Florida Peninsula.....	80.1	-0.6	+2.8	10.76	+2.80	-5.10	6.1	+0.9	80	-1
East Gulf.....	73.8	-1.1	+3.2	4.87	+1.50	-2.20	5.3	+0.8	77	-1
West Gulf.....	76.0	+0.2	+3.6	2.44	-1.20	-9.90	5.3	+1.2	73	-1
Ohio Valley and Tennessee.....	66.5	-1.5	-12.6	2.30	-0.50	+1.90	4.0	-0.4	75	+1
Lower Lakes.....	60.2	-2.9	-20.4	1.88	-0.90	-0.30	6.7	+1.8	74	0
Upper Lakes.....	57.4	-1.7	-25.2	2.32	-0.90	-3.10	5.0	-0.2	80	+2
North Dakota.....	56.9	-0.8	-13.9	1.12	-0.30	-8.20	5.0	+0.6	72	+3
Upper Mississippi Valley.....	63.5	-1.2	-19.7	2.77	-0.50	-1.40	4.5	+0.1	77	+2
Missouri Valley.....	66.6	+0.1	-8.2	2.51	-0.10	-3.20	4.4	+0.2	72	+4
Northern slope.....	58.4	+0.9	-17.6	1.43	+0.30	-1.00	4.3	+0.2	63	+4
Middle slope.....	68.6	+1.0	-4.8	1.21	-0.80	-5.30	3.3	-0.1	65	+4
Southern slope.....	73.7	+1.0	+5.0	1.41	-1.20	-5.20	3.9	+0.3	49	-16
Southern Plateau.....	72.0	+1.5	-7.9	0.40	-0.50	-1.50	3.2	+0.7	48	+6
Middle Plateau.....	63.5	+1.1	-27.0	0.51	+1.50	-1.50	2.5	-0.5	40	-2
Northern Plateau.....	64.0	+2.8	-15.2	1.48	+0.70	-0.70	3.9	+0.2	50	0
North Pacific.....	59.2	+1.6	-9.4	2.25	-0.20	-5.70	6.4	+1.0	82	+3
Middle Pacific.....	65.1	+1.7	-5.8	0.38	-0.20	-6.40	3.2	0.0	51	-12
South Pacific.....	70.5	+3.2	+2.5	T.	-0.20	-2.50	2.0	-0.7	62	-4

WEATHER CONDITIONS OVER THE NORTH ATLANTIC OCEAN DURING SEPTEMBER, 1916.

The data presented are for September, 1916, and comparison and study of the same should be in connection with those appearing in the Review for that month.

Chart IX (XLV-94) shows for September, 1916, the averages of pressure, temperature, and prevailing direction of the wind at 7 a. m., 75th meridian time (Greenwich Mean Noon), together with notes on the locations and courses of the more severe storms of the month.

PRESSURE.

The distribution of the average monthly pressure, as shown on Chart IX, was similar to the normal over the entire ocean, although the isobar of 29.85 inches that marks the southern limits of the Icelandic Low, was about 5° north of its usual position.

The North Atlantic or Azores HIGH, with a crest of 30.18 inches, was practically normal in all respects, and the continental HIGH, with a crest of 30.11 inches was central near Lynchburg, Va., extending as far east as the 67th meridian.

The pressure changes from day to day showed the usual autumnal variations in the higher latitudes, and in one 5-degree square as far south as the Azores, the barometric readings ranged from 30.45 inches on the 4th to 29.81 inches on the 30th. The following table gives for a number of selected 5-degree squares, the average pressure for each of the three decades of the month as well as the highest and lowest individual readings reported during the month within the respective squares.

Pressure over the North Atlantic during September, 1916, by 5-degree squares.

Position of 5-degree squares.		Decade means.			Extremes.			
		I	II	III	Highest.		Lowest.	
Latitude.	Longitude.	Inches.	Inches.	Inches.	Pres- sure.	Date.	Pres- sure.	Date.
60-65 N	20-25 W	29.88	29.95	29.72	30.33	Sept. 9	29.36	24
60-65 N	5-10 E	31.04	29.62	31.08	31.33	7	29.13	13
55-60 N	25-30 W	29.94	31.04	29.53	30.36	13	29.30	25
55-60 N	0-5 E	30.08	29.77	30.11	30.40	9	29.69	4
50-55 N	55-60 W	29.91	30.02	29.81	30.34	11	29.48	26
50-55 N	35-40 W	30.05	31.00	29.57	30.32	9	29.33	30
45-50 N	65-70 W	30.00	30.13	29.83	30.28	10	29.59	25
45-50 N	15-20 W	31.39	31.28	29.72	30.48	9, 10	29.50	25
40-45 N	70-75 W	30.07	31.18	29.96	30.50	11	29.78	2, 8
40-45 N	25-30 W	30.31	30.16	29.88	30.52	10	29.58	30
35-40 N	50-55 W	30.21	29.99	30.14	30.31	1	29.80	15
35-40 N	0-5 W	30.04	31.08	29.97	30.21	12	29.80	28
30-35 N	40-45 W	30.26	30.07	31.13	30.32	7, 9	29.90	15
25-30 N	35-40 W	30.18	30.12	31.08	30.32	4	29.97	24
20-25 N	45-50 W	31.10	30.06	31.09	30.24	26	29.90	30
15-20 N	15-20 W	29.96	31.03	30.01	30.12	14	29.87	10
10-15 N	25-30 W	29.95	30.02	29.98	30.16	23	29.86	10

The mean and extreme pressures presented in the above table are based on the daily pressure values, determined by interpolation, for each square as given on the MS. daily synoptic charts of the North Atlantic compiled by the Marine Section of the Weather Bureau.

GALES.

The month of September is usually characterized by uncertain and variable weather over the North Atlantic, and while the normal percentage of gales is not high, there is a large range in the number reported during different years.

For September, 1916, the number of gales was somewhat below the normal over the entire ocean with the exception of a small area near St. Johns, N. F., and in

the waters adjacent to the American coast, between the 30th and 40th parallels.

In an article that appeared in the MONTHLY WEATHER REVIEW for December, 1916, 44: 686-688, "Hurricanes of 1916 and Notes on Hurricanes of 1912-1915," by Mr. R. H. Weightman, two West Indies hurricanes that appeared in September, 1916, were described and plotted (*ibid.*, chart XLIV-152). These were of comparatively light intensity, and as few vessel reports were received from the vicinity, no attempt has been made to show the tracks on accompanying Chart IX. On September 1 a Low with a minimum barometric reading of 29.37 inches was central near the Faroe Islands. Vessels in its southern quadrants reported southwesterly gales of from 40 to 50 miles an hour; no reports were received from the north of the 60th parallel.

From the 2d to the 5th there were no cyclonic disturbances of any consequence. On the 6th one of limited extent and moderate intensity was central near latitude 44°, longitude 44°, where moderate southwesterly gales were encountered. This Low moved rapidly in a northeasterly direction, and on the 7th and 8th occupied a comparatively large area between the 55th and 65th parallels, and the 14th and 30th meridians, strong gales prevailing on the latter date near the center. On the 9th there was a disturbance near Cape Ray, N. F., where the barometer reading was 29.64 inches; no specially heavy winds were recorded, and fog prevailed off the Banks of Newfoundland. From the 10th to the 19th this area of low pressure remained within the territory between the 40th and 50th parallels, and the 35th meridian and the Canadian coast, moving slightly from day to day in an irregular manner, within these limits. On the 10th a HIGH with a crest of 30.51 inches was central near latitude 45°, longitude 25°; the steep gradients between this area and the Low that on this date was central near St. Johns, N. F., was responsible for moderate to strong southwesterly gales that were encountered along the middle portion of the steamer lanes. The strongest wind of the month occurred on the 12th, when one vessel about 200 miles northeast of St. Johns, reported a northeasterly gale of 65 miles an hour, while a number of vessels in the same general locality, also experienced winds of gale force. Between the 13th and 15th a few scattered reports were received showing winds of gale force between the 50th meridian and the American coast, while from the 16th to the 22d, light to moderate winds were reported over the entire ocean.

On Chart III (XLIV-115) "Tracks of centers of low areas, September, 1916", a Low (*I* on Chart IX, XLV-91) is shown that first appeared on the morning of the 14th, in northwestern Alberta. This moved in an easterly direction with a comparatively slow rate of translation, and on the morning of the 24th the center was near Father Point, Quebec, where the barometric reading was 29.54 inches. On the same day a second Low was central near latitude 55°, longitude 25°, and a number of vessels in the southwesterly quadrants encountered northwesterly gales of from 40 to 55 miles an hour. On the 25th and 26th, Low *I* was central near Cape Ray, N. F., moderate winds prevailing on both dates in that vicinity. On the 25th the second Low was in practically the same position as on the day before, northwesterly gales still being encountered in the same territory. On the 26th this Low had moved about 5° toward the east, the winds having moderated in force. On the 27th the center of Low *I* was near St. Johns, N. F., conditions of

wind and weather remaining about the same as on the day before. The path of this disturbance then curved sharply toward the north, and on the 28th was central near latitude 52°, longitude 40°, light winds and fog being reported from that locality, while moderate northwesterly gales covered a small area about 200 miles southeast of St. Johns. This Low then moved rapidly in an easterly direction and on the 29th was near latitude 52°, longitude 24°; but it had lost greatly in intensity, as no heavy winds were reported. It then turned sharply toward the south, and on the 30th was 150 miles from its position of the previous day, and had gained somewhat in intensity, as northerly gales prevailed over a limited area immediately west of the center.

TEMPERATURE.

The average monthly temperature of the air over the ocean during September, 1916, was considerably above the normal in the vicinity of the northern steamer lanes, and over the region north of the 35th parallel, between the 35th meridian and the European coast. In the lower latitudes the departures were small, ranging from +2 degrees in the eastern part of the northeast trade region to -1 degree in the waters adjacent to the south coast of Cuba, while the temperatures in the Gulf of Mexico were practically normal.

The following table gives the mean departures for September, 1916, at a number of Canadian and United States Weather Bureau stations on the Atlantic and Gulf coasts.

	°F.		°F.
St. John's, N. F.....	+0.6	Norfolk, Va.....	-1.4
Sidney, C. B. I.....	+3.1	Hatteras, N. C.....	-1.5
Halifax, N. S.....	+1.5	Charleston, S. C.....	-1.1
Eastport, Me.....	+0.6	Key West, Fla.....	-0.8
Portland, Me.....	-0.8	Tampa, Fla.....	+1.3
Boston, Mass.....	+2.3	Mobile, Ala.....	+0.5
Nantucket, Mass.....	+0.7	New Orleans, La.....	+1.3
Block Island, R. I.....	-0.8	Galveston, Tex.....	0.0
New York, N. Y.....	-0.5	Corpus Christi, Tex.....	+0.4

The lowest temperature recorded during the month was 48° and occurred on the 12th in the square that includes the east coast of Labrador, and also on the same date in the waters adjacent to the south coast of Greenland. The highest temperature for the same locality was 57°, recorded on a number of different days.

FOG.

Off the Banks of Newfoundland, where the number of days on which fog occurs is usually the greatest, fog was reported during September, 1916, on 8 days, a percentage of 27, which is slightly below the normal. About the same conditions also held true along the New England coast and over the greater part of the steamer lanes.

Winds of 50 mis./hr. (22.4 m./sec.), or over, during September, 1917.

Station.	Date.	Velocity.	Direction.	Station.	Date.	Velocity.	Direction.
		Mis./hr.				Mis./hr.	
Buffalo, N. Y.....	29	54	sw.	New York, N. Y..	30	51	nw.
Cheyenne, Wyo...	27	50	w.	North Head, Wash	6	54	se.
Fort Worth, Tex...	26	52	n.	Pensacola, Fla....	28	103	se.
Louisville, Ky....	7	58	se.	Do.....	29	65	nw.
Mobile, Ala.....	28	98	n.	Pittsburgh, Pa....	6	58	n.
Mount Tamalpais,				Point Reyes Light,			
Cal.....	7	54	nw.	Cal.....	13	60	nw.
Do.....	12	58	nw.	Salt Lake City,			
Do.....	14	54	nw.	Utah.....	4	52	w.
Nantucket, Mass..	17	66	ne.	Sand Key, Fla....	25	50	se.
Do.....	18	67	ne.	Do.....	26	60	se.
				San Juan, P. R....	21	52	ne.